

# SUPER<sup>®</sup>

SUPER X5SS8-GM  
SUPER X5SSE-GM  
SUPER X5SSE-GMII

## USER'S MANUAL

Revision 1.0b

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## Preface

### About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPER X5SS8-GM/X5SSE-GM/X5SSE-GMII motherboard. The SUPER X5SS8-GM/X5SSE-GM/X5SSE-GMII supports single 604-pin Intel® Xeon™ 1.8 - 3.20 GHz processors with a 512K L2 cache at a 533/400 MHz front side bus - refer to the motherboard specifications pages on our web site ([http://www.supermicro.com/Product\\_page/product-m.htm](http://www.supermicro.com/Product_page/product-m.htm)) for updates on supported processors. This product is intended to be professionally installed.

### Manual Organization

**Chapter 1** begins with a checklist of what should be included in your motherboard box, describes the features, specifications and performance of the motherboard and provides detailed information about the chipset.

**Chapter 2** begins with instructions on handling static-sensitive devices. Read this chapter when you want to install the processor and DIMM memory modules and when mounting the mainboard in the chassis. Also refer to this chapter to connect the floppy and hard disk drives, SCSI drives, the IDE interfaces, the parallel and serial ports, the front control panel functions, the speaker and the keyboard.

If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for the video, the memory and the setup configuration stored in CMOS. For quick reference, a general FAQ [Frequently Asked Questions] section is provided. Instructions are also included for contacting technical support. In addition, you can visit our web site at [www.supermicro.com/techsupport.htm](http://www.supermicro.com/techsupport.htm) for more detailed information.

**Chapter 4** includes an introduction to BIOS and provides detailed information on running the CMOS Setup utility.

**Appendix A** gives information on BIOS error beep codes.

**Appendix B** provides POST checkpoint codes.

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# Chapter 1

## Introduction

### 1-1 Overview

#### Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance.

Please check that the following items have been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

One (1) Supermicro Motherboard

One (1) ribbon cable for IDE devices

One (1) floppy ribbon cable

One (1) USB cable

One (1) COM port cable

One (1) I/O backpanel shield

One (1) Supermicro CD or diskettes containing drivers and utilities

One (1) User's/BIOS Manual

One (1) fan/heatsink assembly (FAN-042CF)

One (1) heatsink retention clip assembly (SKT-095E-604)

SCSI Accessories (X5SS8-GM only)

One (1) 68-pin LVD SCSI cable (retail only)

One (1) set of SCSI drivers (included on CD-ROM)

One (1) SCSI manual (PDF file included on CD-ROM)

## Contacting Supermicro

### Headquarters

Address: SuperMicro Computer, Inc.  
980 Rock Ave.  
San Jose, CA 95131 U.S.A.  
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Fax: +1 (408) 503-8008  
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[support@supermicro.com](mailto:support@supermicro.com) (Technical Support)  
Web Site: [www.supermicro.com](http://www.supermicro.com)

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[support@supermicro.nl](mailto:support@supermicro.nl) (Technical Support)  
[rma@supermicro.nl](mailto:rma@supermicro.nl) (Customer Support)

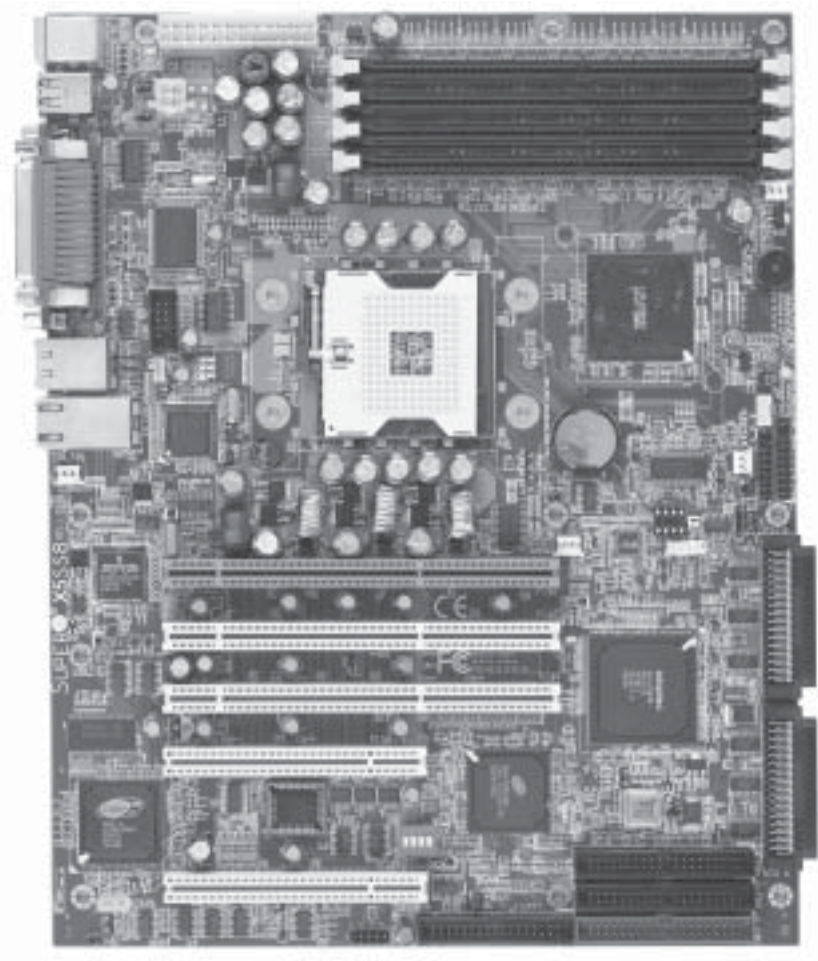
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Tel: +886-(2) 8226-3990  
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Technical Support:  
Email: [support@supermicro.com.tw](mailto:support@supermicro.com.tw)  
Tel: 886-2-8226-3990, ext.132 or 139

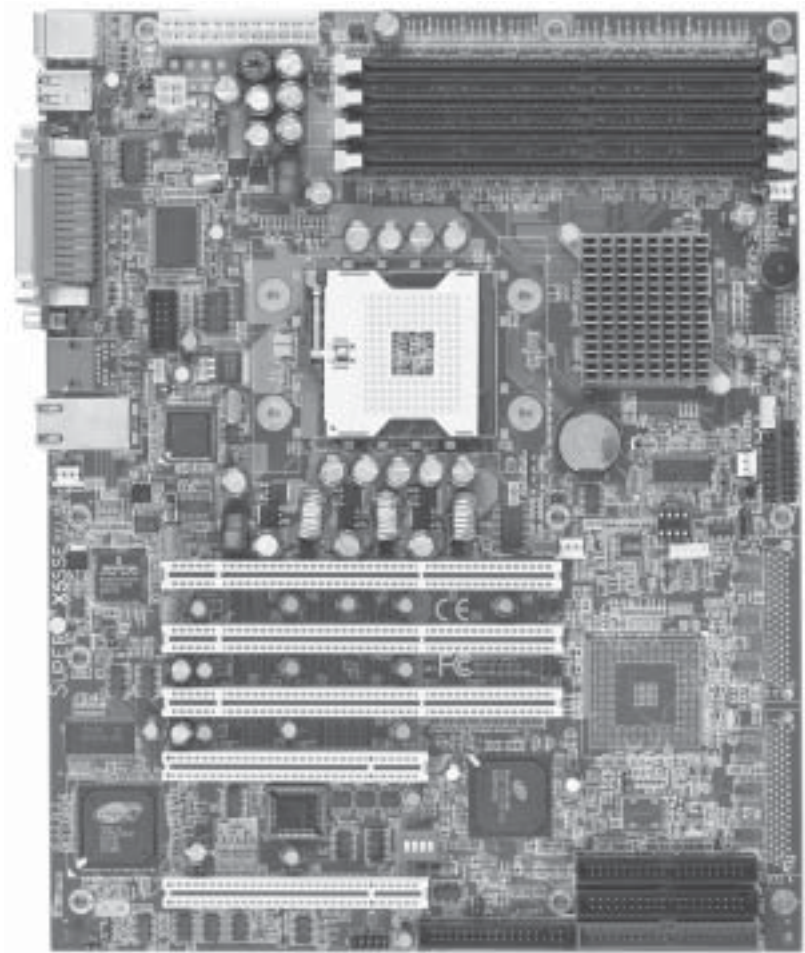


**Notes**

**Figure 1-1. SUPER X5SS8-GM Image**



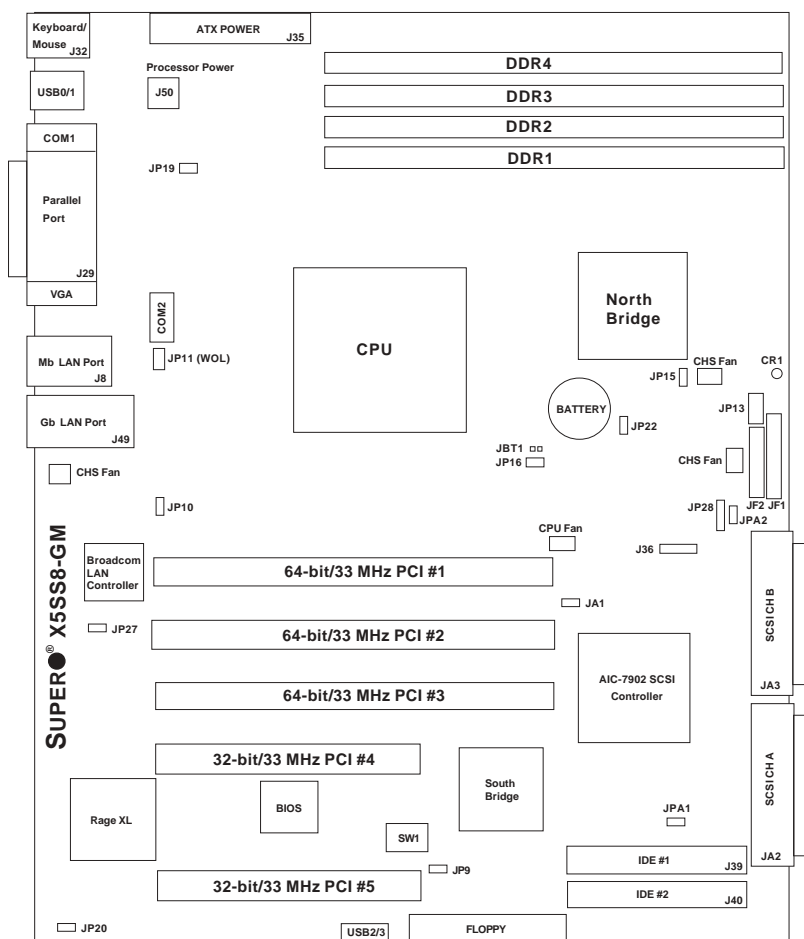
**Figure 1-2. SUPER X5SSE-GM/X5SSE-GMII Image \***



**\*Notes:**

1. The X5SSE-GM motherboard shares the same layout but has both a Mb and a Gb Ethernet port.
2. The X5SSE-GM supports CPUs up to 3.06 MHz, and the X5SSE-GMII supports CPUs up to 3.20 MHz.

**Figure 1-3. SUPER X5SS8-GM Layout**  
(not drawn to scale)



Note: DIP Switch 1 sets the processor speed (see Section 2-7).  
Jumpers not noted are for test purposes only.

Also see Chapter 2 for the locations of the I/O ports and Front Control Panel (JF1/JF2) connectors and for details on jumper settings and pin definitions.

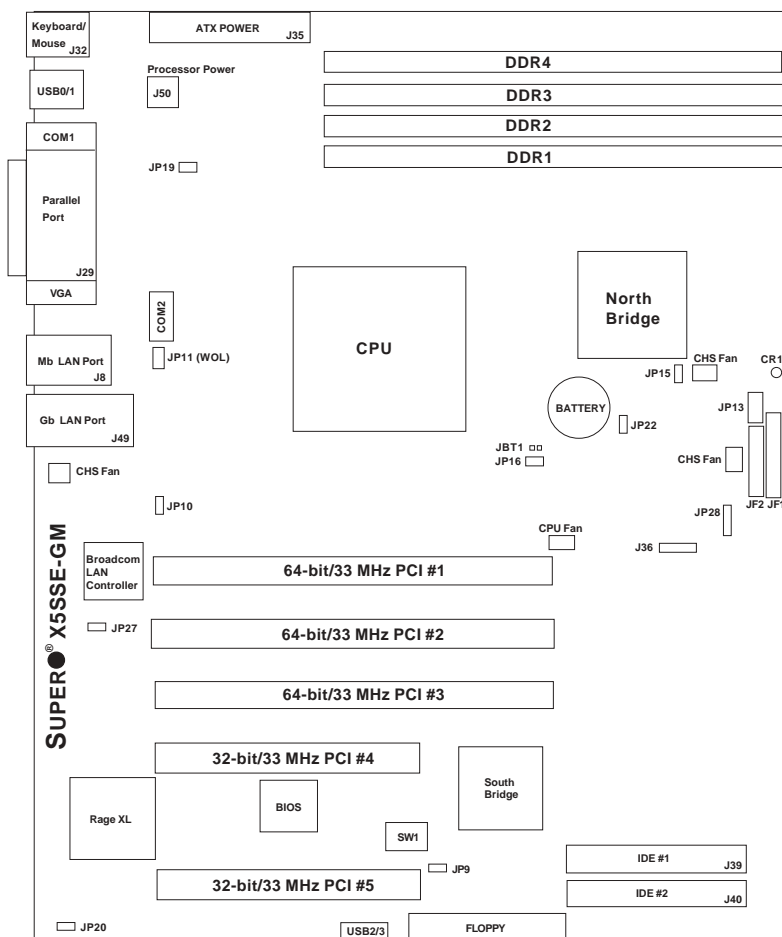
## X5SS8-GM Quick Reference

| <b><u>Jumper</u></b> | <b><u>Description</u></b>    | <b><u>Default Setting</u></b> |
|----------------------|------------------------------|-------------------------------|
| JA1                  | SCSI Enable/Disable          | Pins 1-2 (Enabled)            |
| JBT1                 | CMOS Clear                   | See Chapter 2                 |
| JPA1/A2              | SCSI Channel A/B Termination | Off (Terminated)              |
| JP9                  | VGA Enable/Disable           | Pins 1-2 (Enabled)            |
| JP10                 | Mb LAN Enable/Disable        | Pins 1-2 (Enabled)            |
| JP15                 | Fan Status Select            | Open (OH Condition)           |
| JP19                 | Watch Dog Enable/Disable     | Open (Disabled)               |
| JP20                 | Main Power Override          | Off (Normal)                  |
| JP22                 | System Bus Speed Select      | Pins 1-2 (Auto)               |
| JP27                 | Gb LAN Enable/Disable        | Pins 1-2 (Enabled)            |

| <b><u>Switch</u></b> | <b><u>Description</u></b> |
|----------------------|---------------------------|
| DIP Switch 1         | Processor Speed           |

| <b><u>Connector</u></b> | <b><u>Description</u></b>          |
|-------------------------|------------------------------------|
| COM1/COM2               | COM1/COM2 Serial Ports             |
| CPU/CHS/OH FAN          | CPU/Chassis/Overheat Fan Headers   |
| CPU                     | CPU Socket                         |
| DDR1-DDR4               | Memory (SDRAM) Slots               |
| JA2/JA3                 | Ultra320 LVD SCSI CH A/B Connector |
| JF1                     | Front Control Panel Headers        |
| JF2                     | ChInt/NMI/HD LED/PWR LED Headers   |
| JP11                    | Wake-on-LAN Header                 |
| JP16                    | Chassis Intrusion Header           |
| JP28                    | External Speaker Header            |
| J7                      | VGA Display (Monitor) Port         |
| J8                      | Mb Ethernet Port                   |
| J28                     | Floppy Disk Drive Connector        |
| J29                     | Parallel Printer Port              |
| J32                     | PS/2 Keyboard/Mouse Ports          |
| J35                     | Primary ATX Power Connector        |
| J36                     | SMB Header                         |
| J39/J40                 | IDE1/2 Hard Disk Drive Connector   |
| J49                     | Gb Ethernet Port                   |
| J50                     | Processor Power Connector          |
| USB0/1                  | Universal Serial Bus Ports         |
| USB2/3                  | Universal Serial Bus Headers       |

**Figure 1-4. SUPER X5SSE-GM/X5SSE-GMII Layout**  
(not drawn to scale)



Notes: 1. DIP Switch 1 sets the processor speed (see Section 2-7).

Jumpers not noted are for test purposes only. 2. The X5SSE-GM supports CPUs up to 3.06 MHz, and the X5SSE-GMII supports CPUs up to 3.20 MHz.

Also see Chapter 2 for the locations of the I/O ports and Front Control Panel (JF1/JF2) connectors and for details on jumper settings and pin definitions.

## X5SSE-GM/X5SSE-GMII Quick Reference\*

| <b><u>Jumper</u></b> | <b><u>Description</u></b> | <b><u>Default Setting</u></b> |
|----------------------|---------------------------|-------------------------------|
| JBT1                 | CMOS Clear                | See Chapter 2                 |
| JP9                  | VGA Enable/Disable        | Pins 1-2 (Enabled)            |
| JP10*                | Mb LAN Enable/Disable     | Pins 1-2 (Enabled)            |
| JP15                 | Fan Status Select         | Open (OH Condition)           |
| JP19                 | Watch Dog Enable/Disable  | Open (Disabled)               |
| JP20                 | Main Power Override       | Off (Normal)                  |
| JP22                 | System Bus Speed Select   | Pins 1-2 (Auto)               |
| JP27*                | Gb LAN Enable/Disable     | Pins 1-2 (Enabled)            |

| <b><u>Switch</u></b> | <b><u>Description</u></b> |
|----------------------|---------------------------|
| DIP Switch 1         | Processor Speed           |

| <b><u>Connector</u></b> | <b><u>Description</u></b>        |
|-------------------------|----------------------------------|
| COM1/COM2               | COM1/COM2 Serial Ports           |
| CPU/CHS/OH FAN          | CPU/Chassis/Overheat Fan Headers |
| CPU                     | CPU Socket                       |
| DDR1-DDR4               | Memory (SDRAM) Slots             |
| JF1                     | Front Control Panel Headers      |
| JF2                     | ChInt/NMI/HD LED/PWR LED Headers |
| JP11                    | Wake-on-LAN Header               |
| JP16                    | Chassis Intrusion Header         |
| JP28                    | External Speaker Header          |
| J7                      | VGA Display (Monitor) Port       |
| J8                      | Mb Ethernet Port                 |
| J28                     | Floppy Disk Drive Connector      |
| J29                     | Parallel Printer Port            |
| J32                     | PS/2 Keyboard/Mouse Ports        |
| J35                     | Primary ATX Power Connector      |
| J36                     | SMB Header                       |
| J39/J40                 | IDE1/2 Hard Disk Drive Connector |
| J49                     | Gb Ethernet Port                 |
| J50                     | Processor Power Connector        |
| USB0/1                  | Universal Serial Bus Ports       |
| USB2/3                  | Universal Serial Bus Headers     |

**\*Notes:** 1. The X5SSE-G motherboard shares the same layout but has a Gb Ethernet port and no Mb Ethernet port. 2. The X5SSE-GM supports CPUs up to 3.06 MHz, and the X5SSE-GMII supports CPUs up to 3.20 MHz.

## **Motherboard Features**

### **CPU**

- Single 604-pin Intel® Xeon™ processors with a 512K L2 cache to 3.20 GHz at a front side (system) bus speed of 533/400 MHz.

**Note:** Please refer to the support section of our web site for a complete listing of supported processors (<http://www.supermicro.com/TechSupport.htm>).

### **Memory**

- Four 184-pin DIMM sockets supporting up to 4 GB of ECC registered DDR-266/200 (PC2100/1600) SDRAM

### **Chipset**

- ServerWorks Grand Champion SL

### **Expansion Slots**

- Three 64-bit 33 MHz and two 32-bit 33 MHz PCI slots

### **BIOS**

- 4 Mb AMI® Flash ROM
- APM 1.2, DMI 2.3, PCI 2.2, ACPI 1.0, Plug and Play (PnP), SMBIOS 2.3

### **PC Health Monitoring**

- Onboard voltage monitors for CPU core, chipset voltage, +5V, +12V, -12V, +3.3V and +2.5V
- Fan status monitor with firmware/software on/off control
- Environmental temperature monitor and control
- Power-up mode control for recovery from AC power loss
- System overheat LED and control
- System resource alert

### **ACPI Features**

- Microsoft OnNow
- Slow blinking LED for suspend state indicator
- Main switch override mechanism



**Onboard I/O**

- AIC-7902 for dual channel Ultra320 SCSI (X5SS8-GM only)
- Integrated ATI Rage XL Graphics Controller
- Adaptec ZCR card support (X5SS8-GM only)
- One Broadcom BCM5702 Gb fast Ethernet controller
- One Intel 82551 10/100 Mb fast Ethernet controller (X5SS8-GM, X5SSE-GM/X5SSE-GMII)
- 2 EIDE Ultra DMA/100 bus master interfaces
- 1 floppy port interface (up to 2.88 MB)
- 2 Fast UART 16550A compatible serial ports
- 1 EPP/ECP (Enhanced Parallel Port/Extended Capabilities Port)
- PS/2 mouse and PS/2 keyboard ports
- 4 USB (Universal Serial Bus) ports (USB 1.1)

**Other**

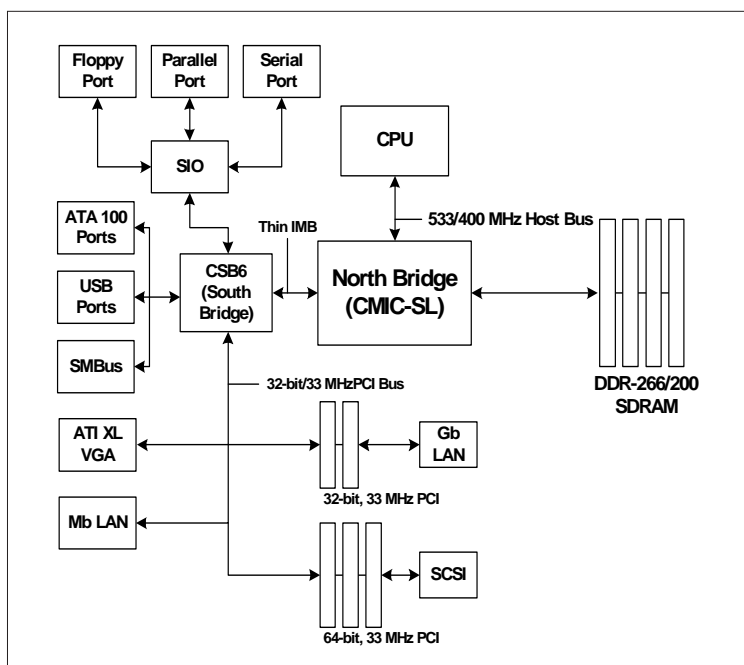
- Internal/external modem ring-on (S1 state support only)
- Recovery from AC power loss control
- Wake-on-LAN (WOL)
- Console redirection
- FUCI (Frontside USB Control Interface)

**CD/Diskette Utilities**

- BIOS flash upgrade utility
- Device Drivers

**Dimensions**

- X5SS8-GM: ATX: 12" x 9.625" (305 x 244.5 mm)
- X5SSE-GM: ATX: 12" x 9.625" (305 x 244.5 mm)



**Figure 1-5. ServerWorks Grand Champion SL Chipset:  
System Block Diagram**

**Note:** This is a general block diagram. Please see the previous Motherboard Features Section for details on the features of each motherboard.

## 1-2 Chipset Overview

The Grand Champion SL™ is a fourth-generation product of ServerWorks "Champion" chipset technology. The GCSL chipset configuration used for the X5SS8-GM/X5SSE-GM/X5SSE-GMII is comprised of a North Bridge (CMIC-SL) and a South Bridge (CSB6).

The North Bridge interfaces directly to the processors via a 533/400 MHz Host bus and integrates the functions of the main memory subsystem and the IMB bus interface unit. The memory subsystem consists of a 4 DIMM configuration accessed over a 266 MHz memory bus at a peak bandwidth of 1.6 GB/sec.

The South Bridge provides various integrated functions, including the PCI bridge and support for UDMA100, security (passwords and system protection), Plug & Play, USBs, power management, interrupt controllers and the LPC Bus.

## 1-3 Special Features

### ATI Graphics Controller

The X5SS8-GM/X5SSE-GM/X5SSE-GMII has an integrated ATI video controller based on the Rage XL graphics chip. The Rage XL fully supports side-band addressing and AGP texturing. This onboard graphics package can provide a bandwidth of up to 512 MB/sec over a 32-bit graphics memory bus.

### BIOS Recovery

The BIOS Recovery function allows you to recover your BIOS image file if the BIOS flashing procedure fails (see Section 3-3).

### Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must hit the power switch to turn it back on) or for it to automatically return to a power on state. See the Power Lost Control setting in the Advanced BIOS Setup section (Peripheral Device Configuration) to change this setting. The default setting is Always On.

---

## 1-4 PC Health Monitoring

This section describes the PC health monitoring features of the SUPER X5SS8-GM/X5SSE-GM/X5SSE-GMII. Both have an onboard System Hardware Monitor chip that supports PC health monitoring.

### **Onboard Voltage Monitors for the CPU Core, Chipset Voltage, +5V, +12V, -12V, +3.3V and +2.5V**

An onboard voltage monitor will scan these voltages continuously. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

### **Fan Status Monitor with Firmware/Software On/Off Control**

The PC health monitor can check the RPM status (tachometer reading) of the cooling fans. The onboard 3-pin CPU and chassis fans are controlled by the power management functions. The thermal fan is controlled by the over-heat detection logic.

### **Environmental Temperature Control**

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. It can continue to monitor for overheat conditions even when the CPU is in sleep mode. Once it detects that the CPU temperature is too high, it will automatically turn on the thermal control fan to prevent any overheat damage to the CPU. The onboard chassis thermal circuitry can monitor the overall system temperature and alert users when the chassis temperature is too high.

### **System Resource Alert**

This feature is available when used with Intel's LANDesk Client Manager (retail only). LDCM is used to notify the user of certain system events. For example, if the system is running low on virtual memory and there is insufficient hard drive space for saving the data, you can be alerted of the potential problem.

## **Hardware BIOS Virus Protection**

The system BIOS is protected by hardware that prevents viruses from infecting the BIOS area. The user can only change the BIOS content through the flash utility provided by Supermicro. This feature can prevent viruses from infecting the BIOS area and destroying valuable data.

## **Auto-Switching Voltage Regulator for the CPU Core**

The auto-switching voltage regulator for the CPU core can support up to 20A current and auto-sense voltage IDs ranging from 1.4V to 3.5V. This will allow the regulator to run cooler and thus make the system more stable.

## **1-5 ACPI Features**

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers. This also includes consumer devices connected to the PC such as VCRs, TVs, telephones and stereos.

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with Windows 2000.

## **Microsoft OnNow**

The OnNow design initiative is a comprehensive, system-wide approach to system and device power control. OnNow is a term for a PC that is always on but appears to be off and responds immediately to user or other requests.

## **Slow Blinking LED for Suspend-State Indicator**

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

## **Main Switch Override Mechanism**

When an ATX power supply is used, the power button can function as a system suspend button to make the system enter a SoftOff state. The monitor will be suspended and the hard drive will spin down. Depressing the power button again will cause the whole system to wake-up. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system alive. In case the system malfunctions and you want to turn off the power, just depress and hold the power button for 4 seconds. This option can be set in the Power section of the BIOS Setup routine.

## **External Modem Ring-On**

Wake-up events can be triggered by a device such as the external modem ringing when the system is in the SoftOff state (only S1 state is supported). Note that external modem ring-on can only be used with an ATX 2.01 (or above) compliant power supply.

## **Wake-On-LAN (WOL)**

Wake-On-LAN is defined as the ability of a management application to remotely power up a computer that is powered off. Remote PC setup, updates and asset tracking can occur after hours and on weekends so that daily LAN traffic is kept to a minimum and users are not interrupted. The motherboards have a 3-pin header (WOL) to connect to the 3-pin header on a Network Interface Card (NIC) that has WOL capability. Wake-On-LAN must be enabled in BIOS. Note that the Broadcom 1 Gb LAN port only supports the S1 suspend state.

## 1-6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

The SUPER X5SS8-GM/X5SSE-GM/X5SSE-GMII accommodates ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. You should use one that will supply at least 300W of power - an even higher wattage power supply is recommended for high-load configurations. Also your power supply must provide a +5V standby voltage that supplies at least 720 mA of current. In addition, 1.5A is needed for LAN1 and LAN2.

**NOTE: Secondary 12v ATX power (at J50) is necessary to support Intel Xeon CPUs. Failure to provide this extra power will result in the CPUs becoming unstable after only a few minutes of operation. See Section 2-5 for details on connecting the power supply cables.**

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

## 1-7 Super I/O

The disk drive adapter functions of the Super I/O chip include a floppy disk drive controller that is compatible with industry standard 82077/765, a data separator, write pre-compensation circuitry, decode logic, data rate selection, a clock generator, drive interface control logic and interrupt and DMA logic. The wide range of functions integrated onto the Super I/O greatly reduces the number of components required for interfacing with floppy disk drives. The Super I/O supports 360 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s. It also provides two high-speed, 16550 compatible serial communication ports (UARTs), one of which supports serial infrared communication. Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system.

Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O supports one PC-compatible printer port (SPP), Bi-directional Printer Port (BPP) , Enhanced Parallel Port (EPP) or Extended Capabilities Port (ECP).

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

The IRQs, DMAs and I/O space resources of the Super I/O can flexibly adjust to meet ISA PnP requirements, which support ACPI and APM (Advanced Power Management).



## Chapter 2

# Installation

### 2-1 Static-Sensitive Devices

Electric-Static-Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

#### Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the anti-static bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

#### Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

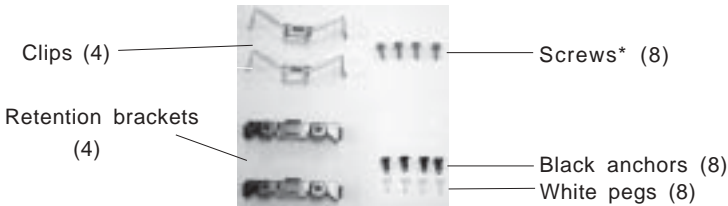
## 2-2 PGA Processor and Heatsink Installation



*When handling the processor package, avoid placing direct pressure on the label area of the fan. Also, do not place the motherboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.*

**IMPORTANT:** Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket **before** you install the CPU heat sink.

1. Locate the following components, which are included in the shipping package.



\*These screws are for mounting the motherboard to the back panel of a chassis that has four mounting holes (as shown on right).

For chassis that do not have four mounting holes, use the anchor/peg assemblies:



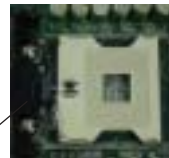
2. Insert the white pegs into the black anchors. Do not force the white pegs all the way in - only about 1/3 of the way into the black anchors.

Anchor/peg assemblies



3. Place a retention bracket in the proper position and secure it by pressing pegs into two of the retention holes until you hear a \*click\*. The clicking sound indicates that the peg is locked and secured.

One retention bracket in position



4. Secure the other retention bracket into position by repeating Step 3.



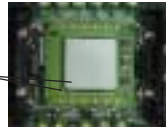
5. Lift the lever on the CPU socket: lift the the lever completely or you will damage the CPU socket when power is applied.

Socket lever



6. Install the CPU in the socket. Make sure that pin 1 of the CPU is seated on pin 1 of the socket (both corners are marked with a triangle).

Pin 1



7. Press the lever down until you hear it \*click\* into the locked position.

8. Apply the proper amount of thermal compound to the CPU die and place the heatsink and fan on top of the CPU.

Heatsink

CPU



9. Secure the heatsink by locking the retention clips into their proper position.

Retention clip



10. Connect the three wires of the CPU fan to the respective CPU fan connector.

CPU fan wires

CPU fan connector



**Figure 2-1. PGA604 Socket: Empty and with Processor Installed**



**Warning!** Make sure you lift the lever completely when installing the CPU. If the lever is only partly raised, damage to the socket or CPU may result.

Pin 1

Empty Socket

Lever

Triangle

With processor installed

Triangle

### Mounting the Motherboard in the Chassis

All motherboards have standard mounting holes to fit different types of chassis. Make sure the location of all the mounting holes for both the motherboard and the chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they ground the motherboard to the chassis. Make sure the metal standoffs click in or are screwed in tightly. Then use a screwdriver to secure the motherboard onto the motherboard tray.

## 2-3 Installing DIMMs

**Note:** Check the Supermicro web site for recommended memory modules:  
[http://www.supermicro.com/TECHSUPPORT/FAQs/Memory\\_vendors.htm](http://www.supermicro.com/TECHSUPPORT/FAQs/Memory_vendors.htm)

### CAUTION

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

### DIMM Installation (See Figure 2-2)

1. Insert one to four memory modules. Memory is not interleaved, so you can add any number of DIMMs into the slots in any order.
2. Insert each DIMM module into its slot. Note the notch at the bottom of the module to prevent inserting the module incorrectly.
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for more modules as desired.

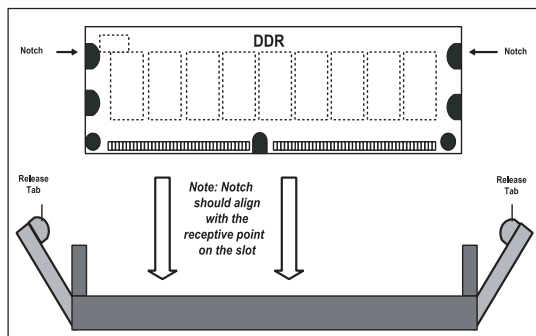
#### Support

The X5SS8-GM/X5SSE-GM/X5SSE-GMII supports up to 4 GB of ECC registered DDR-266/200 (PC2100/1600) SDRAM memory. You must be running 533 MHz FSB processor(s) to use DDR-266 SDRAM.

**Figure 2-2. Installing and Removing DIMMs**

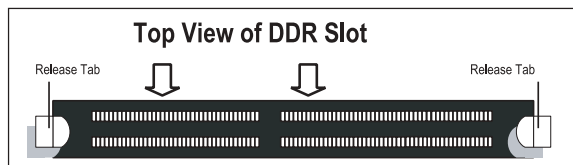
#### To Install:

Insert the module vertically and press down until it snaps into place. Pay attention to the notch on the bottom of the module.



#### To Remove:

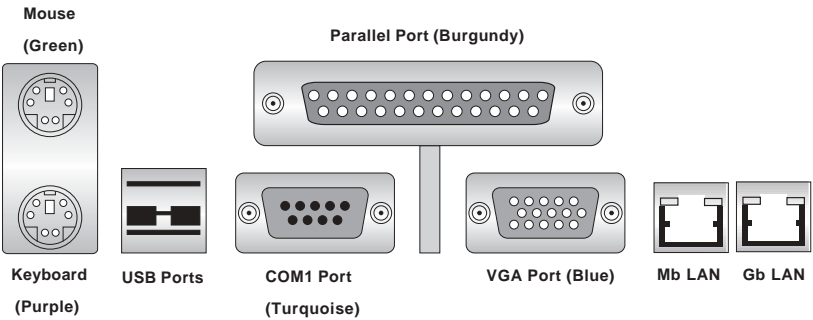
Use your thumbs to gently push near the edge of both ends of the module. This should release it from the slot.



## 2-4 IO Ports/Control Panel Connectors

The IO ports are color coded in conformance with the PC 99 specification. See Figure 2-3 below for the colors and locations of the various IO ports.

**Figure 2-3. IO Port Locations and Definitions**

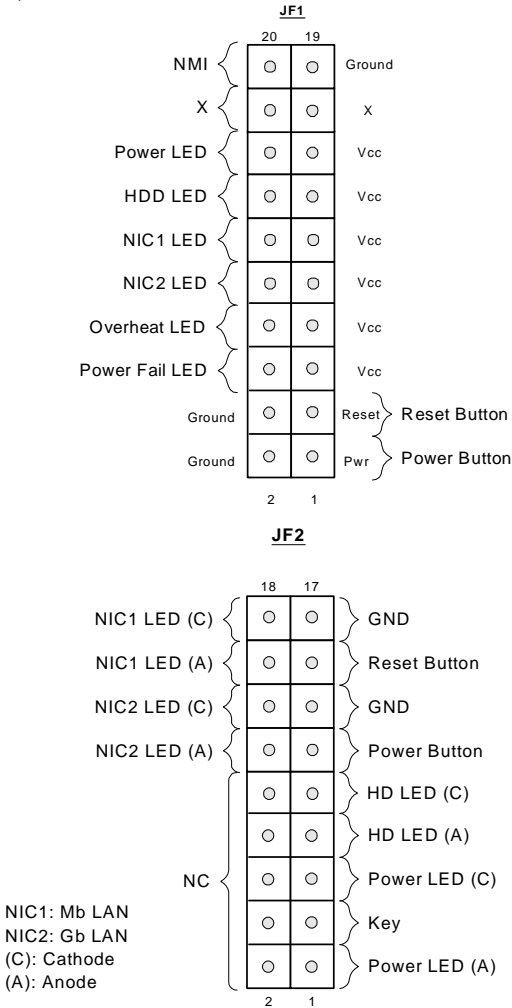


**Note:** COM2 is a header located on the motherboard behind the VGA port.

Front Control Panel

JF1 and JF2 contain header pins for various front control panel connectors. These connectors are designed for use with Supermicro server chassis. See Figure 2-4 for the pin locations of the various front control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions. Note: the top six pins of JF2 make up the JF3 header. No functions are associated with the JF3 pins; they are included to accommodate larger connectors.

Figure 2-4. JF1/JF2 Header Pins



# 2-5 Connecting Cables

## ATX Power Connection

The power supply connector (at J35) meets the SSI (Superset ATX) 24-pin specification, however it also supports a 20-pin power supply connector. Make sure that the orientation of the connector is correct. See the table on the right for pin definitions.

**24-pin ATX Power Supply Connector (J35)  
Pin Definitions**

| Pin Number | Definition | Pin Number | Definition |
|------------|------------|------------|------------|
| 13         | +3.3V      | 1          | +3.3V      |
| 14         | -12V       | 2          | +3.3V      |
| 15         | COM        | 3          | COM        |
| 16         | PS_ON#     | 4          | +5V        |
| 17         | COM        | 5          | COM        |
| 18         | COM        | 6          | +5V        |
| 19         | COM        | 7          | COM        |
| 20         | Res(NC)    | 8          | PWR_OK     |
| 21         | +5V        | 9          | 5VSB       |
| 22         | +5V        | 10         | +12V       |
| 23         | +5V        | 11         | +12V       |
| 24         | COM        | 12         | +3.3V      |

## Processor Power Connection

In addition to the Primary ATX power connector (above), the 12v 4-pin Processor Power connector at J50 must also be connected to your power supply. See the table on the right for pin definitions.

**4-Pin +12v Power Supply Connector (J50)**

| Pins  | Definition |
|-------|------------|
| 1 & 2 | Ground     |
| 3 & 4 | +12v       |

## Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

**PWR\_LED Pin Definitions (JF1)**

| Pin Number | Definition |
|------------|------------|
| 15         | +5V        |
| 16         | Control    |

## HDD LED

The HDD LED (for IDE Hard Disk Drives) connection is located on pins 13 and 14 of JF1. Attach the IDE hard drive LED cable to these pins to display disk activity. Refer to the table on the right for pin definitions.

**(IDE) HDD LED Pin Definitions (JF1)**

| Pin Number | Definition |
|------------|------------|
| 13         | +5V        |
| 14         | HD Active  |



## L2 LED

The L2 (LAN2 - Gb LAN) LED connection is located on pins 9 and 10 of JF1. Attach an LED cable to display network activity. Refer to the table on the right for pin definitions.

**L2 LED Pin  
Definitions  
(JF1)**

| Pin<br>Number | Definition |
|---------------|------------|
| 9             | +5V        |
| 10            | GND        |

## L1 LED

The L1 (LAN1 - Mb LAN) LED connection is located on pins 11 and 12 of JF1. Attach an LED cable to display network activity. Refer to the table on the right for pin definitions.

**L1 LED Pin  
Definitions  
(JF1)**

| Pin<br>Number | Definition |
|---------------|------------|
| 11            | +5V        |
| 12            | GND        |

## Overheat LED (OH)

Connect an LED to the OH connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

**Overheat (OH) LED  
Pin Definitions  
(JF1)**

| Pin<br>Number | Definition |
|---------------|------------|
| 7             | +5V        |
| 8             | GND        |

## Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

**Power Fail LED Pin  
Definitions  
(JF1)**

| Pin<br>Number | Definition |
|---------------|------------|
| 5             | Control    |
| 6             | GND        |

## Reset

The Reset connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

**Reset Pin  
Definitions  
(JF1)**

| Pin<br>Number | Definition |
|---------------|------------|
| 3             | Reset      |
| 4             | Ground     |

## PWR\_ON

The PWR\_ON connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (see the Power Button Mode setting in BIOS). To turn off the power when set to suspend mode, depress the button for at least 4 seconds. Refer to the table on the right for pin definitions.

**PWR\_ON Connector  
Pin Definitions  
(JF1)**

| Pin Number | Definition |
|------------|------------|
| 1          | PW_ON      |
| 2          | Ground     |

## Universal Serial Bus (USB0/1)

Two Universal Serial Bus ports are located beside the keyboard/mouse ports. USB0 is the bottom connector and USB1 is the top connector. See the table on the right for pin definitions.

**Universal Serial Bus Pin Definitions  
USB0 USB1**

| Pin Number | Definition | Pin Number | Definition |
|------------|------------|------------|------------|
| 1          | +5V        | 1          | +5V        |
| 2          | P0-        | 2          | P0-        |
| 3          | P0+        | 3          | P0+        |
| 4          | Ground     | 4          | Ground     |
| 5          | N/A        | 5          | Key        |

## Extra Universal Serial Bus Connection (USB2/3)

Two additional USB headers on the motherboard can provide convenient front side USB access. The odd numbered pins (toward the DIMM slots) are for USB2 and the even numbered pins (toward the SCSI chip) are for USB3. You will need a USB cable (not included) to use each of these connections. Refer to the tables on the right for pin definitions.

**USB2 Pin  
Definitions**

| Pin Number | Definition |
|------------|------------|
| 1          | Power      |
| 3          | -          |
| 5          | +          |
| 7          | Ground     |
| 9          | Key        |

**USB3 Pin  
Definitions**

| Pin Number | Definition |
|------------|------------|
| 2          | Power      |
| 4          | -          |
| 6          | +          |
| 8          | Ground     |
| 10         | NC         |

NC = No Connection

Serial Ports

The COM1 serial port is located under the parallel port (see Figure 2-3). See the table on the right for pin definitions. The COM2 connector is a header located behind the VGA port.

Serial Port Pin Definitions  
(COM1, COM2)

| Pin Number | Definition | Pin Number | Definition |
|------------|------------|------------|------------|
| 1          | DCD        | 6          | CTS        |
| 2          | DSR        | 7          | DTR        |
| 3          | Serial In  | 8          | RI         |
| 4          | RTS        | 9          | Ground     |
| 5          | Serial Out | 10         | NC         |

PS/2 Keyboard and Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J32. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See Figure 2-3.)

PS/2 Keyboard  
and Mouse Port  
Pin Definitions  
(J32)

| Pin Number | Definition |
|------------|------------|
| 1          | Data       |
| 2          | NC         |
| 3          | Ground     |
| 4          | VCC        |
| 5          | Clock      |
| 6          | NC         |

NC = No Connection

Fan Headers\*

The X5SS8-GM/X5SSE-GM/X5SSE-GMII has one CPU, two Chassis and one Chassis/Overheat fan headers. See the table on the right for pin definitions.

Fan Header Pin Definitions  
(CPU/CHS/OH Fans)

| Pin Number | Definition     |
|------------|----------------|
| 1          | Ground (black) |
| 2          | +12V (red)     |
| 3          | Tachometer     |

Caution: These fan headers are DC power.

LAN (Ethernet) Ports

Two Ethernet ports are located beside the VGA port on the IO backplane. These ports accept RJ45 type cables. See the next section for a description of the LEDs on the LAN ports.

Note: The X5SS8-GM/X5SSE-GM/X5SSE-GMII has one 10/100 Mb and one Gb LAN port. When viewed from the rear, the Mb port is on the left (see Figure 2-3).



### HD LED Indicator

A HD LED connector is located on JF2 (see Figure 2-4). This LED indicates activity on any hard drive (IDE, SCSI or CD-ROM).

### Chassis Intrusion

A Chassis Intrusion header is located at JF2 and another on JP16. Attach the appropriate connector here to inform you of a chassis intrusion condition.

### Power LED

The Power LED connection on JF2 (see Figure 2-4) is used to inform you that power is being supplied to the motherboard.

### Wake-On-LAN

The Wake-On-LAN header is designated JP11. See the table on the right for pin definitions. You must have a LAN card with a Wake-on-LAN connector and cable to use this feature.

**Wake-On-LAN Pin  
Definitions (JP11)**

| Pin<br>Number | Definition  |
|---------------|-------------|
| 1             | +5V Standby |
| 2             | Ground      |
| 3             | Wake-up     |

### SMB

An SMB (System Management Bus) header is located at J36. Connect the appropriate cable here to utilize SMB on your system.

**SMB Header  
Pin Definitions (J36)**

| Pin<br>Number | Definition  |
|---------------|-------------|
| 1             | Data        |
| 2             | Ground      |
| 3             | Clock       |
| 4             | +5V Standby |

## External Speaker Header

Connect a cable from an external speaker to the JP28 header on the motherboard if you wish to use external speakers instead of the onboard speaker.

## 2-6 Onboard Indicators

### LAN Port LEDs

Each of the Ethernet ports (located beside the VGA port) has a yellow and a green LED. See the tables to the right for the functions associated with these LEDs. On the Gb LAN port, the yellow LED indicates activity while the other LED may be green, orange or off to indicate the speed of the connection (as specified in the table at right).

**100 Mb LAN LED Indicators**

| LED Color | Definition |
|-----------|------------|
| Green     | Connected  |
| Yellow    | Active     |

**1 Gb LAN Right LED Indicator**

| LED Color | Definition    |
|-----------|---------------|
| Off       | No Connection |
| Green     | 100 MHz       |
| Orange    | 1 GHz         |

**1 Gb LAN Left LED Indicator**

| LED Color | Definition |
|-----------|------------|
| Off       | Not Active |
| Yellow    | Active     |

### CR1 LED

CR1 is an onboard LED that serves as a power indicator. It is located near JF1. See the table on the right for the meaning of each of the three colors displayed by CR1.

**Onboard LED Power Indicator (CR1)**

| LED Color | Definition   |
|-----------|--------------|
| Green     | Power On     |
| Yellow    | Standby Mode |
| Red       | CPU Error    |

## 2-7 DIP Switch Settings

### DIP Switch 1: Processor Speed

The red "DIP" switch labeled SW1 has four individual switches, which are used to set the speed of the processor.

The table on the right shows you the switch settings for the various speeds your processor may be able to run at. (This table is also silkscreened on the motherboard.)

**Note:** Most Intel processors have a fixed Core/Bus ratio that overwrites the setting of DIP Switch 1.

Processor Speed Selection  
(DIP Switch 1)

| CPU     | SW<br>#1 | SW<br>#2 | SW<br>#3 | SW<br>#4 |
|---------|----------|----------|----------|----------|
| 1.3 GHz | ON       |          | ON       |          |
| 1.4 GHz |          | ON       | ON       |          |
| 1.5 GHz | ON       | ON       | ON       |          |
| 1.6 GHz |          |          |          | ON       |
| 1.7 GHz | ON       |          |          | ON       |
| 1.8 GHz |          | ON       |          | ON       |
| 1.9 GHz | ON       | ON       |          | ON       |
| 2.0 GHz |          |          | ON       | ON       |
| 2.1 GHz | ON       |          | ON       | ON       |
| 2.2 GHz |          | ON       | ON       | ON       |
| 2.4 GHz | ON       | ON       | ON       | ON       |

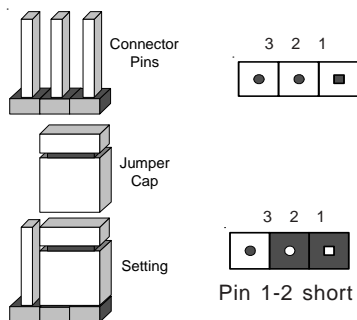
< Default

## 2-8 Jumper Settings

### Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

**Note:** On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins. "Off" means open with no jumper cap included for those pins.



### CMOS Clear

JBT1 is used to clear CMOS. Instead of pins, this jumper consists of contact pads to prevent accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS. JBT1 is located near the battery on the motherboard.

**Note:** For an ATX power supply, you must completely shut down the system, remove the AC power cord and then short JBT1 to clear CMOS. Do not use the PW ON connector to clear CMOS.

## VGA Enable/Disable

JP9 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

**VGA Enable/Disable  
Jumper Settings  
(JP9)**

| Jumper Position | Definition |
|-----------------|------------|
| 1-2             | Enabled    |
| 2-3             | Disabled   |

## Fan Status Select

JP15 allows you to change the status of the Overheat/Chassis fan to either activate only during an overheat condition (set in BIOS) or to remain active at all times. The default position is open. See the table on the right for jumper settings.

**Fan Status Select  
Jumper Settings (JP15)**

| Jumper Position | Definition |
|-----------------|------------|
| Open            | Overheat   |
| Closed          | Always On  |

## Watch Dog Enable/Disable

JP19 is used to enable or disable the Watch Dog function. This jumper is used together with the Watch Dog enable function in BIOS. Enable both the jumper and the BIOS setting to use the Watch Dog feature. See the table on the right for pin definitions.

**Watch Dog Enable/  
Disable  
Jumper Settings (JP19)**

| Jumper Position | Definition |
|-----------------|------------|
| Open            | Disabled   |
| Closed          | Enabled    |

## Mb LAN Enable/Disable

Change the setting of jumper JP10 to enable or disable the Mb LAN port on the motherboard. See the table on the right for jumper settings. The default setting is pins 1-2.

**Mb LAN  
Enable/Disable  
Jumper Settings  
(JP10)**

| Jumper Position | Definition |
|-----------------|------------|
| Pins 1-2        | Enabled    |
| Pins 2-3        | Disabled   |



## Gb LAN Enable/Disable

Change the setting of jumper JP27 to enable or disable the Gb LAN port on the motherboard. See the table on the right for jumper settings. The default setting is pins 1-2.

**Gb LAN  
Enable/Disable  
Jumper Settings  
(JP27)**

| Jumper Position | Definition |
|-----------------|------------|
| Pins 1-2        | Enabled    |
| Pins 2-3        | Disabled   |

## SCSI Termination Enable/Disable (X5SS8-GM only)

Jumpers JPA1 and JPA2 allow you to enable or disable termination for the SCSI connectors. Jumper JPA1 controls SCSI channel A and JPA2 is for SCSI channel B. The normal (default) setting is open to enable (terminate) both SCSI channels. See the table on the right for jumper settings.

**SCSI Channel Termination  
Enable/Disable  
Jumper Settings  
(JPA1, JPA2)**

| Jumper Position | Definition |
|-----------------|------------|
| Open            | Enabled    |
| Closed          | Disabled   |

## SCSI Enable/Disable (X5SS8-GM only)

The SCSI Enable/Disable jumper at JA1 allows you to enable or disable the onboard SCSI. The normal (default) position is on pins 1-2 to enable SCSI. See the table on the right for jumper settings.

**SCSI Enable/Disable  
Jumper Settings  
(JA1)**

| Jumper Position | Definition |
|-----------------|------------|
| Pins 1-2        | Enabled    |
| Pins 2-3        | Disabled   |

## 2-9 Parallel Port, Floppy/Hard Disk Drive and SCSI Connections

Note the following when connecting the floppy and hard disk drive cables:

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

### Parallel Port Connector

The parallel port is located on J29.  
See the table below right for pin definitions.

**Parallel (Printer) Port Pin Definitions  
(J29)**

| Pin Number | Function   | Pin Number | Function   |
|------------|------------|------------|------------|
| 1          | Strobe-    | 2          | Auto Feed- |
| 3          | Data Bit 0 | 4          | Error-     |
| 5          | Data Bit 1 | 6          | Init-      |
| 7          | Data Bit 2 | 8          | SLCT IN-   |
| 9          | Data Bit 3 | 10         | GND        |
| 11         | Data Bit 4 | 12         | GND        |
| 13         | Data Bit 5 | 14         | GND        |
| 15         | Data Bit 6 | 16         | GND        |
| 17         | Data Bit 7 | 18         | GND        |
| 19         | ACK        | 20         | GND        |
| 21         | BUSY       | 22         | GND        |
| 23         | PE         | 24         | GND        |
| 25         | SLCT       | 26         | NC         |

## Floppy Connector

The floppy connector is located on J28. See the table below for pin definitions.

**Floppy Connector Pin Definitions  
(JP28)**

| Pin Number | Function | Pin Number | Function        |
|------------|----------|------------|-----------------|
| 1          | GND      | 2          | FDHDIN          |
| 3          | GND      | 4          | Reserved        |
| 5          | Key      | 6          | FDEDIN          |
| 7          | GND      | 8          | Index-          |
| 9          | GND      | 10         | Motor Enable    |
| 11         | GND      | 12         | Drive Select B- |
| 13         | GND      | 14         | Drive Select A- |
| 15         | GND      | 16         | Motor Enable    |
| 17         | GND      | 18         | DIR-            |
| 19         | GND      | 20         | STEP-           |
| 21         | GND      | 22         | Write Data-     |
| 23         | GND      | 24         | Write Gate-     |
| 25         | GND      | 26         | Track 00-       |
| 27         | GND      | 28         | Write Protect-  |
| 29         | GND      | 30         | Read Data-      |
| 31         | GND      | 32         | Side 1 Select-  |
| 33         | GND      | 34         | Diskette        |

## IDE Connectors

There are no jumpers to configure the onboard IDE#1, #2 and #3 connectors (J39, J40 and J41, respectively). See the table on the right for pin definitions.

**Note:** IDE#3 only supports a CD-ROM device.

**IDE Connector Pin Definitions  
(J39, J40, J41)**

| Pin Number | Function      | Pin Number | Function       |
|------------|---------------|------------|----------------|
| 1          | Reset IDE     | 2          | GND            |
| 3          | Host Data 7   | 4          | Host Data 8    |
| 5          | Host Data 6   | 6          | Host Data 9    |
| 7          | Host Data 5   | 8          | Host Data 10   |
| 9          | Host Data 4   | 10         | Host Data 11   |
| 11         | Host Data 3   | 12         | Host Data 12   |
| 13         | Host Data 2   | 14         | Host Data 13   |
| 15         | Host Data 1   | 16         | Host Data 14   |
| 17         | Host Data 0   | 18         | Host Data 15   |
| 19         | GND           | 20         | Key            |
| 21         | DRQ3          | 22         | GND            |
| 23         | I/O Write-    | 24         | GND            |
| 25         | I/O Read-     | 26         | GND            |
| 27         | IOCHRDY       | 28         | BALE           |
| 29         | DACK3-        | 30         | GND            |
| 31         | IRQ14         | 32         | IOCS16-        |
| 33         | Addr 1        | 34         | GND            |
| 35         | Addr 0        | 36         | Addr 2         |
| 37         | Chip Select 0 | 38         | Chip Select 1- |
| 39         | Activity      | 40         | GND            |

**Ultra320 SCSI  
Connector (X5SS8-GM)**

Refer to the table below for the pin definitions of the Ultra320 SCSI connectors located at JA2 and JA3.

**68-pin Ultra320 SCSI Connectors  
(JA2, JA3)**

| Connector Contact Number | Signal Names | Connector Contact Number | Signal Names |
|--------------------------|--------------|--------------------------|--------------|
| 1                        | +DB(12)      | 35                       | -DB(12)      |
| 2                        | +DB(13)      | 36                       | -DB(13)      |
| 3                        | +DB(14)      | 37                       | -DB(14)      |
| 4                        | +DB(15)      | 38                       | -DB(15)      |
| 5                        | +DB(P1)      | 39                       | -DB(P1)      |
| 6                        | +DB(0)       | 40                       | -DB(0)       |
| 7                        | +DB(1)       | 41                       | -DB(1)       |
| 8                        | +DB(2)       | 42                       | -DB(2)       |
| 9                        | +DB(3)       | 43                       | -DB(3)       |
| 10                       | +DB(4)       | 44                       | -DB(4)       |
| 11                       | +DB(5)       | 45                       | -DB(5)       |
| 12                       | +DB(6)       | 46                       | -DB(6)       |
| 13                       | +DB(7)       | 47                       | -DB(7)       |
| 14                       | +DB(P)       | 48                       | -DB(P)       |
| 15                       | GROUND       | 49                       | GROUND       |
| 16                       | DIFFSENS     | 50                       | GROUND       |
| 17                       | TERMPWR      | 51                       | TERMPWR      |
| 18                       | TERMPWR      | 52                       | TERMPWR      |
| 19                       | RESERVED     | 53                       | RESERVED     |
| 20                       | GROUND       | 54                       | GROUND       |
| 21                       | +ATN         | 55                       | -ATN         |
| 22                       | GROUND       | 56                       | GROUND       |
| 23                       | +BSY         | 57                       | -BSY         |
| 24                       | +ACK         | 58                       | -ACK         |
| 25                       | +RST         | 59                       | -RST         |
| 26                       | +MSG         | 60                       | -MSG         |
| 27                       | +SEL         | 61                       | -SEL         |
| 28                       | +C/D         | 62                       | -C/D         |
| 29                       | +REQ         | 63                       | -REQ         |
| 30                       | +I/O         | 64                       | -I/O         |
| 31                       | +DB(8)       | 65                       | -DB(8)       |
| 32                       | +DB(9)       | 66                       | -DB(9)       |
| 33                       | +DB(10)      | 67                       | -DB(10)      |
| 34                       | +DB(11)      | 68                       | -DB(11)      |